

## **REMARKS**

Claim 18 stands rejected under 35 U.S.C. §112, first paragraph. The rejection is respectfully traversed.

The Examiner rejected the claim and stated that “the disclosure lacks an adequate description regarding how the recited SiO<sub>2</sub> material and the recited SiO<sub>x</sub>N<sub>y</sub> material can both be formed during the same RTP.”

Claim 18, which depends from Claim 13, recites that the step of forming an emission layer comprises forming an approximate 20Å SiO<sub>2</sub> layer and a SiO<sub>x</sub>N<sub>y</sub> layer in the approximate range of 30 – 130. Claim 13 recites forming the emission layer “with a rapid thermal formation process.” As noted later in this Response, a rapid thermal formation process is commonly understood to mean a growth process. Applying the definition in the context of Claim 18 means forming an emission layer by forming a SiO<sub>2</sub> layer and a SiO<sub>x</sub>N<sub>y</sub> layer can be achieved “with a rapid thermal formation process” whether that process is deemed to be applied individually to each layer or jointly to both layers. Applicants respectfully submit that, in view of the definition of a rapid thermal formation process, the method of Claim 13 is clearly enabled by the Specification. To the extent that the Examiner intended the remarks to mean that different precursors are required to form the separate layers, Applicants agree. Consistent with the above remarks, the layers may be, in fact, part of the same RTP formation process as such processes are understood in the art.

Claims 13-19 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner states that the limitation of “a rapid thermal formation process lacks an adequate definition.” The Examiner states “it is not clear whether it means that the heating up process is rapid, or it is the whole formation process that is rapid.” The rejection is respectfully traversed as artisans understand the meaning of “a rapid thermal formation process.” This is a term of art and should be accorded its ordinary meaning. The ordinary meaning is conjured up in the present specification, for example, at page 4, line 22 through line 24, where rapid thermal formation, namely RTP growth processes, are discussed. Since the Examiner states unfamiliarity with this common term of art, the Examiner’s attention is respectfully directed toward a web site that includes a good deal of background information about RTP processes. The web site is [www.rtp-conference.org](http://www.rtp-conference.org). The Examiner also might attempt to conduct a search on rapid thermal process or a term such as “rapid thermal CVD,” indicating a rapid thermal chemical vapor deposition process. The latter is an example of rapid thermal

growth process. Because “a rapid thermal formation process” would be clearly understood by those skilled in the art, the rejection should be withdrawn.

Claims 13, 18 and 19 stand rejected under §103 as being obvious over JP ‘986 in view of US ‘080. The rejection is respectfully traversed. Applicants agree that JP ‘986 discloses a method for forming an emitter. With reference to Figure 1 of JP ‘986, the oxide film 2, which may be SiO<sub>2</sub>, “is formed by wet oxidation.” A tunnel oxide portion of the film 2a is formed by gettering processing. This is stated in paragraph 15 of the translation. Wet oxidation and gettering are not rapid thermal formation processes. There is no suggestion of a rapid thermal formation of an oxide layer in JP’986.

The Examiner is incorrect in incorporating the teachings of the US ‘080 patent. The JP ‘086 patent specifies particular oxidation processes, namely gettering processing and particularly halogen addition oxidation style processing. The entirety of paragraph 15 is devoted to a particular process for oxidation to form the tunnel oxide film 2a. An artisan would not be motivated to replace this process described with such particularity since JP ‘086 quite clearly deems it critical to the invention described therein.

In addition, the combination of JP’986 and US’080 fails to disclose or suggest the claimed features. According to claim 13, a patterned oxide layer is formed to define an emission area upon an electron supply layer. The next step then uses a rapid thermal formation process to form an emission layer within the emission area. With reference to JP ‘986, and paragraphs 13-15 in particular, the oxide film 2 is deposited by wet oxidation, and then a portion of the film is converted by the thermal oxidation. Thus, there is no step corresponding to the separate step of forming an emission layer in claim 13.

Another basis upon which the combination fails to teach or suggest the invention of claim 13 is that neither of the references disclose a rapid thermal formation process. As discussed above, a rapid thermal formation process is a growth process. Thus, rapid thermal formation is a growth of the emission layer using an RTP process. The US ‘080 patent, on the other hand, merely discloses a rapid thermal oxidation process. The thermal oxidation used to convert a layer in the JP ‘986 is different than formation itself.

Applicants separately traverse the rejection because the stated motivation for the combination is unsupported by evidence. The Examiner cites two reasons. The first

reason is "suppressed oxidation." This reason is not understood as it is not clear what the Examiner means by "suppressed oxidation." It is also not clear what it has to do with the teachings of either of the applied references. The second reference is "enhanced emission efficiency would be obtained." This is a generic motivation unsupported by evidence. Enhanced emission efficiency in the art of emitters is a universal goal, and cannot serve as a motivation to combine two particular references without evidence to support the combination. If "enhanced emission efficiency" without specific evidence from the references were an appropriate motivation, the entire art would be a single reference that could be used to form rejections. In other words, the stated motivation lacks any specificity and could apply to any arbitrary combination of references in the art. It is accordingly an inappropriate and generic motivation.

Applicants separately traverse the rejection with regard to claim 18. The Examiner makes the rejection by stating that the  $\text{SiO}_2$  layer and the  $\text{SiO}_x\text{N}_y$  layers can both be  $\text{SiO}_2$ . This is not a reasonable interpretation of the claim. The use of separate terms necessarily implies separate materials. In addition, Applicants note that the Examiner, in paragraph 3 of the office action, necessarily interprets the two materials to be different from each other.

For the foregoing reasons, Applicants believe that this case is in condition for allowance, which is respectfully requested. The Examiner should call Applicants' attorney if an interview would expedite prosecution.

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